The Italian Remote Sensing Data Archive: from DBRMS to WEB distribution

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View of "Mario Zucchelli Station", Terra Nova Bay. Lat -74,68 – Lon 164,08

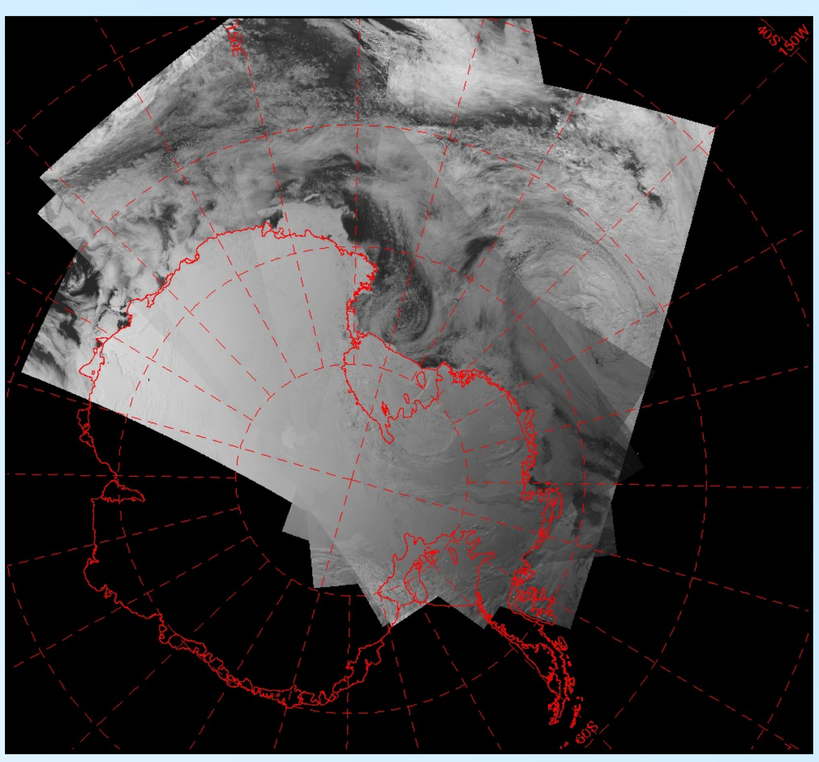
During the Antarctic campaign 1989-1990, a NOAA-HRPT receiving system was installed at the Italian Base, "Mario Zucchelli Station", formerly known as "Terra Nova Bay Station". When the base is open, usually from mid-October to mid-February, the receiving station is fully operational.

Three NOAA polar orbiting satellites are normally in operation at the same time, at the present they are NOAA-15, NOAA-17, NOAA-18. During the campaign 1997-1998 was installed a new dual-receiving HRPT station to get also DMSP (Defence Meteorological Satellites Program of USA) satellites and currently we get data from three of them: f-13, f-14 and f-15.

All data acquired during campaigns are stored on DDS tape, which format has been changed during years. Up to now more than 7 TB of data are stored on different media (from 8mm tapes to DDS4 tapes), regarding a period of time from 1989 to 2007.

Nowadays about fifty passes per day are acquired and processed each day, reaching a total of around 4500 passes per expedition.

TeraScan outdoor hardware on the roof of "Mario Zucchelli Station"



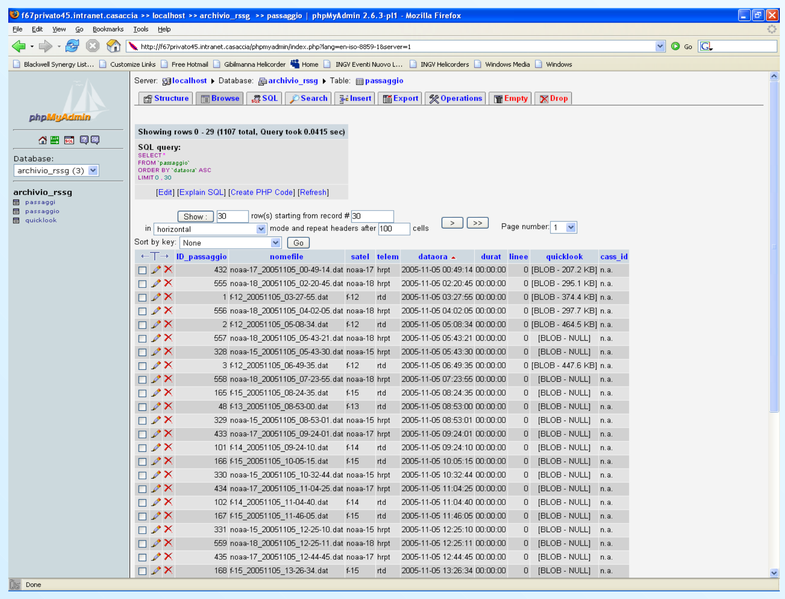
Example of a TeraScan visible composite image from five different passes .

In order to achieve a more flexible and reliable system to access all the above data, in 2005, a process to copy to Hard-Disk storage in RAID mode, has been started. The activity is a work in progress, in the meantime the opportunity to realize a web application to process and distribute data to scientific community has been planned. We created a working prototype system based on a LAMP open source architecture (Linux, Apache, MySQL, PHP) and the TeraScan software (from SeaSpace Corp.) to process and archive remote sensing data.

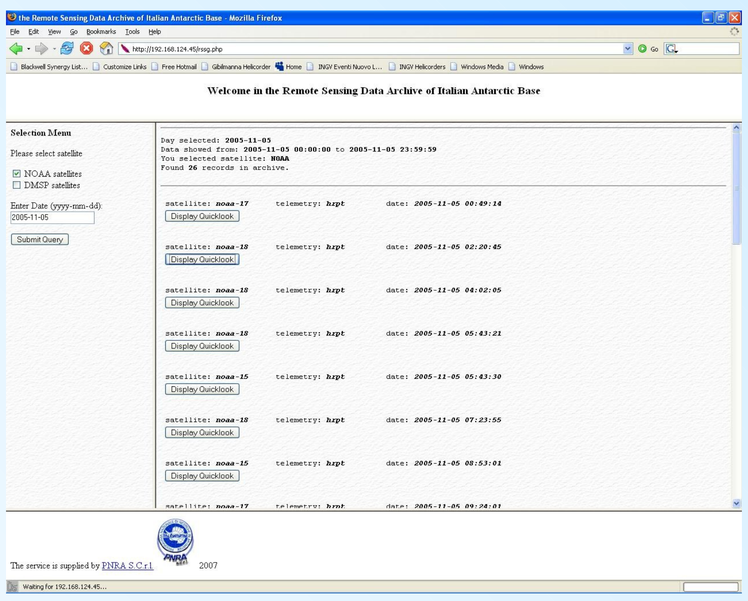
Inside database all information regarding each raw pass(filename, satel. type, telemetry, date, duration, lines, quicklook, etc) are stored in tables. When a user query the database (available search criteria are date and telemetry) for information regarding a specific pass, the application displays it on a web page; if results for that pass are not into the database, the software instantiates a TeraScan session to generate them and finally loads them into the db as blob fields.

As a prototype we decided to produce via TeraScan scripts a quicklook JPG image(AVHRR ch l/DMSP ols) to display.

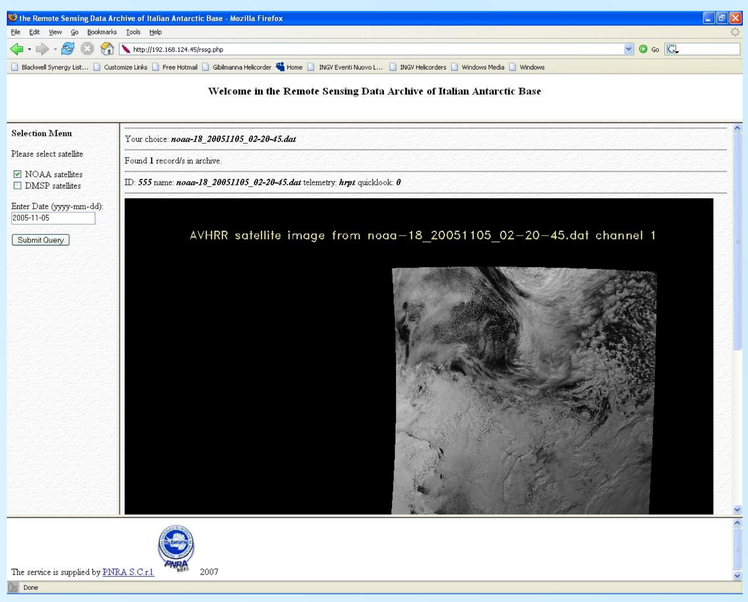
Below are screenshots of the steps involved in the process.



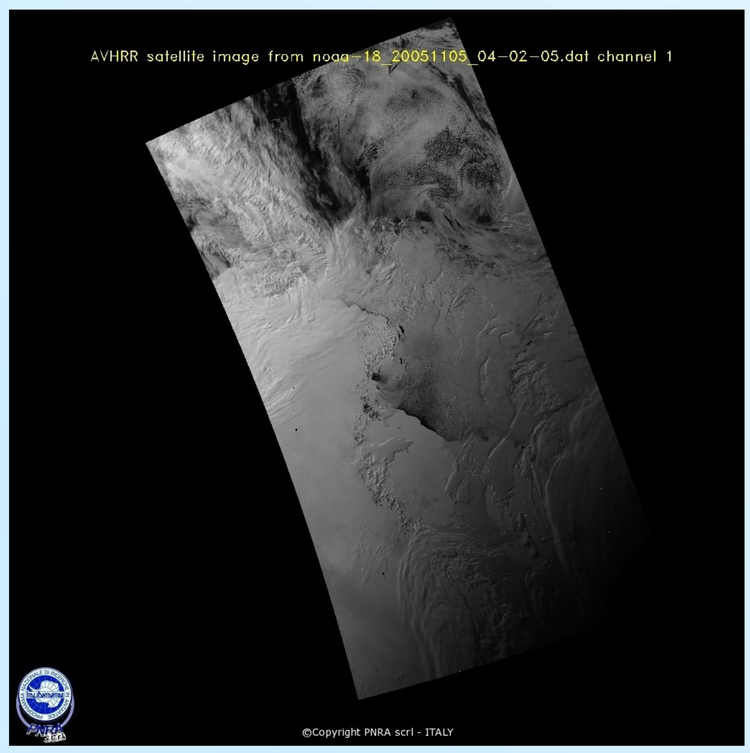
Screenshot of the "phpMyAdmin" management interface for the MySql database



a) Query the database for a NOAA satellite for a specific date.



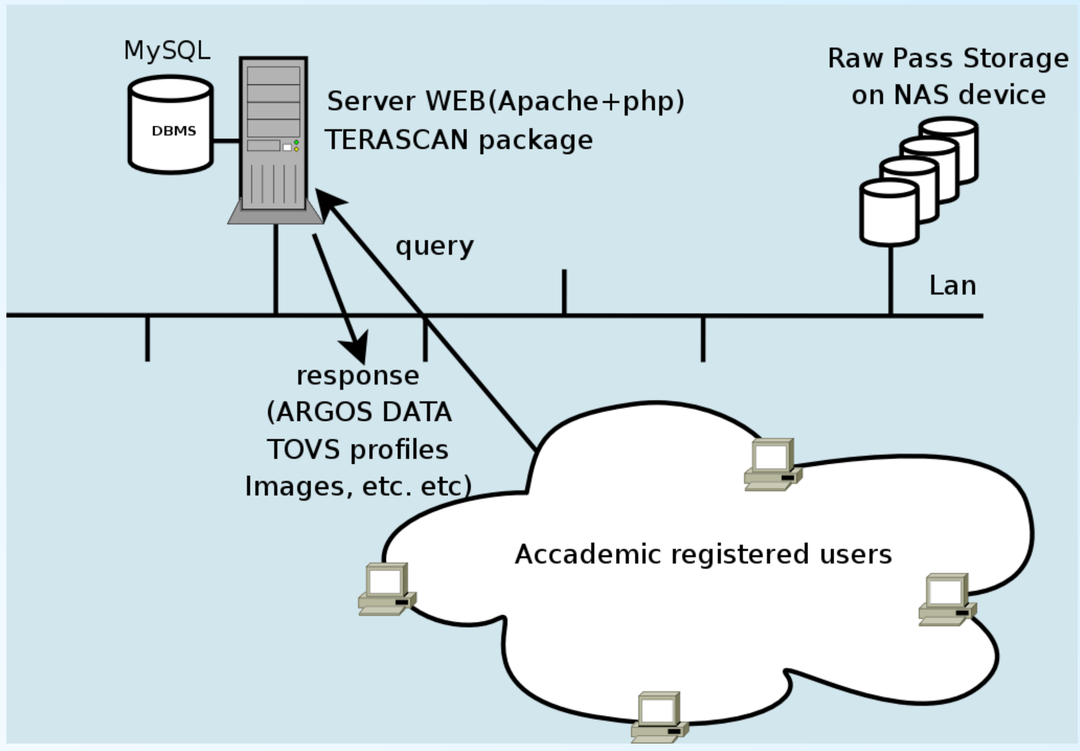
b) Results are showed based on the search criteria.



c) Terascan quicklook JPG image(as stored in blob db format.)

Conclusion

This demo is just a first step of an application that in the future will be able to supply to the user a valid tool to navigate in entire data archive and eventually getting products such AVHRR images, TOVS profile, ARGOS data or extracting the complete satellite pass.



System architecture and future hardware development.

Bibliography

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